

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11)

EP 1 241 891 A1

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:

18.09.2002 Bulletin 2002/38

(51) Int Cl.7: H04N 7/24

(21) Application number: 01106133.0

(22) Date of filing: 13.03.2001

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE TR

Designated Extension States:

AL LT LV MK RO SI

(71) Applicant: eJay AG

70178 Stuttgart (DE)

(72) Inventor: Schmitz, Helmut

73230 Kirchheim/Teck-Jesingen (DE)

(74) Representative: Grünecker, Kinkeldey,  
Stockmair & Schwahnhäuser Anwaltssozietät  
Maximilianstrasse 58

80538 München (DE)

## (54) Apparatus and method for transmitting audio and/or video data

(57) The invention provides an apparatus for transmitting audio and/or video data to receiving means, comprising means for determining the type of the receiving means; means for compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and means for transmitting the compressed audio and/or video data to the receiving means. The invention further provides

a method for transmitting audio and/or video data, comprising the steps of determining the generic type of a receiving means; compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and transmitting the compressed audio and/or video data to the receiving means.

EP 1 241 891 A1

Best Available Copy

**Description****Field of the Invention**

[0001] The invention relates to apparatus and methods for transmitting audio and/or video data. Particularly, the invention relates to transmitting compressed audio and/or video data.

**Prior Art**

[0002] It is well known in the art to compress audio and/or video data before transmitting such data. In particular, in the field of e-commerce it became recently quite popular to order audio and/or video data files via Internet. These audio and/or video data files are generally stored in data bases of a provider, which data bases can be accessed by a consumer via Internet and the provider's computer (server). Since the audio and/or video files are generally quite large, such files are compressed on the provider's computer before they are transmitted to a consumer. To compress audio and/or video data, a variety of compression algorithms are well known in the art, for example the different MPEG standards. Only due to such compression, audio and/or video data can be transmitted from the provider's server to the consumer's computer within a time accepted by consumers.

[0003] Furthermore, recently it became possible to access the Internet not only via computers but also via other devices such as portable telephones, and the like. Also in the field of wireless transmission, compression algorithms are used, for example for transmitting data to a portable telephone. The present apparatus and methods for transmitting audio and/or video data from the providers' computers (servers), however, are not capable of transmitting audio and/or video files to such receiving devices within a time accepted by consumers, since the compressed files are still too large for being transmitted.

[0004] In view of this, the objective problem underlying the invention is to provide apparatus and methods which enables a provider to transmit audio and/or video data files to different receiving devices, particularly to consumers' computers via Internet or to consumers' portable telephones or set-top-box via Internet and a wireless network within a time and a quality which is accepted by consumers.

**Description of the Invention**

[0005] This objective problem is solved by an apparatus for transmitting audio and/or video data to receiving means, comprising means for determining the type of the receiving means; means for compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and means for transmitting the compressed au-

dio and/or video data to the receiving means.

[0006] Since the apparatus for transmitting audio and/or video data of the invention determines the type of the receiving means, and uses a compression algorithm which corresponds to the receiving means, or in other words which is optimized with respect to receiving means, the invention enables providers to transmit audio and/or video data files - independently of the type of the receiving device - to consumers within a time and with a quality which is accepted by consumers.

[0007] According to a preferred embodiment of the invention, the means for determining can determine between at least two different types of receiving means, and the compressing means are to compress audio and/or video data with one compression algorithm of at least two different compression algorithms, each compression algorithm corresponding to a determined type of receiving means.

[0008] In this embodiment, for each different type of receiving means, the apparatus comprises a different compression algorithm which is optimized with respect to the receiving means.

[0009] Preferably, the above discussed apparatus of the invention can be adapted to determine between different generic types of receiving means such as computer, hifi receiver, portable telephone, car hifi receiver, set-top-box, TV receiver and the like.

[0010] Alternatively and additionally, the above discussed apparatus can be adapted to determine between different models of one generic type of receiving means such as between different hifi receiver, between different portable telephones, between different car hifi receivers, between different set-top-boxes, between different TV receivers and the like. In this embodiment also an optimization for different models of one generic type or an optimization for different generic types and different models for the generic types can be established. This embodiment is of advantage when the receiving means of one generic type are not standardized, particularly, when different model types of one generic type use different decompression algorithms.

[0011] Preferably, the means for transmitting the compressed audio and/or video data are to transmit the data via Internet, Intranet and/or a wireless network. Of course, also other sources for transmitting can be used.

[0012] In accordance with a preferred embodiment, the means for compressing the audio and/or video data can compress the data with different compression rates for different types of receiving means. Thus, an optimization with respect to short transmitting time and quality of compressed data can be obtained.

[0013] Further, also the means for transmitting the audio and/or video data can transmit the data with different transmitting rates for different types of receiving means.

[0014] In this embodiment, adapting to transmitting rates of different receiving devices can be easily obtained.

[0015] Preferably, the apparatus of the invention may comprise means for selecting a compression rate and a

transmitting rate such that the time for transmitting is minimized on the one hand and the quality of the compressed data is maximized on the other hand. Such means may set both rates automatically or give the operator of the receiving device the option to select specific rates for his/her needs, for example one user might accept a longer transmission for a higher quality of the data, whereas another user might prefer shorter transmission times and accept a lower quality of the data.

[0015] The above objective problem is also solved by a method for transmitting audio and/or video data, comprising the steps of determining the generic type of a receiving means; compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and transmitting the compressed audio and/or video data to the receiving means.

[0016] This method can be further developed such that determining is performed between at least two different types of receiving means, and compressing audio and/or video data is performed with one of at least two different compression algorithms, each algorithm depending on the determined type of receiving means.

[0017] In this context, the at least two different types may comprise different generic types such as computer, hifi receiver, portable telephone, car hifi receiver, set-top-box, and TV receiver and/or different model types of one generic type, as already discussed above.

[0018] Preferably, the compressed audio and/or video data may be transmitted via Internet, Intranet, and/or a wireless network.

[0019] In the above discussed methods the audio and/or video data may be compressed with different compression rates for different types of the receiving means.

[0020] Additionally or alternatively, in the above discussed methods the audio and/or video data may be transmitted with different transmitting rates for different types of the receiving means.

[0021] Further, compression rate and transmitting rate may be selected such that the time for transmitting is minimized and the quality of the compressed data is maximized.

[0022] With respect to the advantages of the different above discussed embodiments of the methods of the invention, reference is made to the discussion of the corresponding apparatus claims.

#### Detailed Description of the Invention

[0023] In the following a specific example of an apparatus and method for transmitting audio and/or video data to receiving means of the invention is given.

[0024] In this example, the apparatus of the invention comprises means for determining the type of the receiving means. This means for determining requests from the receiving means a signal which indicates the generic type of the receiving means. This signal can be sent

from the receiving means automatically upon demand or may be input by the consumer (i.e. operator of the receiving means.)

[0025] Upon receipt of this signal, the means for determining can discriminate between a variety of different generic types of receiving means. Whereas, in this example, only a discrimination between different generic types of receiving means is made, this is not to be understood as a limitation. As a matter of fact, also a discrimination can be made between different models of one generic type, or a combination of both alternatives, i.e., different generic types and different model types within one generic type.

[0026] In this example, a discrimination can be made between a consumer's computer and a consumer's portable telephone. Also this is not to be understood as limiting; indeed a variety of different generic types of receiving means may be employed, for example hifi receiver, car hifi receiver, set-top-box, and/or TV receiver.

[0027] Furthermore, the apparatus also comprises means for compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means.

[0028] If it is determined in this example that the receiving means is a computer, then a conventional compression algorithm, such as MPEG compression will be used. Such a compression ensures an acceptable time for transmission as well as a very high quality of the compressed data, i.e., there is hardly any loss in quality (with respect to the original data on the providers' apparatus) when the data are decompressed on the consumers' computers.

[0029] Should the receiving means be a portable telephone, then a compression algorithm is used which takes into account that the amount of data which can be received by a portable telephone (in the same time) is significantly smaller. In other words, a compression algorithm is used which has a higher compression rate than the MPEG compression resulting in a lower quality of the compressed data. However, these data can be transferred in a time which is acceptable for the consumers. The invention uses the ??? compression algorithm which is well known in the field of wireless transmitting data, for example to portable telephones.

[0030] Both compression algorithms can be implemented in the apparatus in form of software and/or hardware.

[0031] After compression the compressed audio and/or video data are transmitted to the receiving means which comprises a decompression algorithm (also in form of software and/or hardware) to decompress the audio and/or video data and make the data available to the consumers.

[0032] In view of this, and in contrast to a transmission with an MPEG compression, with the invention it is possible to transmit audio and/or video data also to a portable telephone within a time which is acceptable to consumers.

[0033] Whereas in the above example, the MPEG compression and the ACC compression is used, this is not to be understood as limiting. As a matter of fact, all known compression algorithms can be used as long as it is ensured that a compromise between quality of the decompressed audio and/or video data and a transmission time being acceptable for consumers is obtained.

### Claims

1. Apparatus for transmitting audio and/or video data to receiving means, comprising  
means for determining the type of the receiving means;  
means for compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and  
means for transmitting the compressed audio and/or video data to the receiving means.
2. Apparatus according to claim 1, wherein the means for determining are to determine between at least two different types of receiving means, and the compressing means are to compress audio and/or video data with a compression algorithm of at least two different compression algorithms, each compression algorithm corresponding to a determined type of receiving means.
3. Apparatus according to claim 2, wherein the at least two different types comprise different generic types such as computer, hifi receiver, portable telephone, car hifi receiver, set-top-box, and TV receiver and/or different model types of one generic type.
4. Apparatus according to any one of claims 1 to 3, wherein the means for transmitting the compressed audio and/or video data are to transmit the data via Internet, Intranet and/or a wireless network.
5. Apparatus according to any one of claims 1 to 4, wherein the means for compressing the audio and/or video data are to compress the data with different compression rates for different types of receiving means.
6. Apparatus according to any one of claims 1 to 5, wherein the means for transmitting the audio and/or video data are to transmit the data with different transmitting rates for different types of receiving means.
7. Apparatus according to claim 6 in combination with claim 5, comprising means for selecting a compression rate and a transmitting rate such that the time for transmitting is minimized and the quality of the compressed data is maximized.
8. Method for transmitting audio and/or video data, comprising  
determining the generic type of a receiving means;  
compressing the audio and/or video data with a compression algorithm corresponding to the determined type of the receiving means; and  
transmitting the compressed audio and/or video data to the receiving means.
9. Method according to claim 8, wherein determining is performed between at least two different types of receiving means, and compressing audio and/or video data is performed with one of at least two different compression algorithms, each algorithm depending on the determined type of receiving means.
10. Method according to claim 9, wherein the at least two different types comprises different generic types such as computer, hifi receiver, portable telephone, car hifi receiver, set-top-box, and TV receiver and/or different model types of one generic type.
11. Method according to any one of claims 8 to 10, wherein the compressed audio and/or video data are transmitted via Internet, Intranet, and/or a wireless network.
12. Method according to any one of claims 8 to 11, wherein the audio and/or video data are compressed with different compression rates for different types of the receiving means.
13. Method according to any one of claims 8 to 12, wherein the audio and/or video data are transmitted with different transmitting rates for different types of the receiving means.
14. Method according to claim 13 in combination with claim 12, wherein a compression rate and a transmitting rate is selected such that the time for transmitting is minimized and the quality of the compressed data is maximized.



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number

EP 01 10 6133

## DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	GB 2 318 030 A (IBM) 8 April 1998 (1998-04-08) * abstract * * page 2, line 36 - line 40 * * page 5, line 10 - line 24 * * page 6, line 13 - line 24 * * page 16, line 1 - page 17, line 20 * ---	1-14	H04N7/24
X	WO 99 00984 A (AHARONI AMIR ;ARIEL OREN (IL); KHIRMAN STAS (IL); TAITS EUGENE (IL) 7 January 1999 (1999-01-07) * page 3, line 5 - page 4, line 4 * * page 12, line 5 - line 6 * * page 14, line 1 - line 17 * * page 20, line 4 - line 15 * ---	1-14	
X	GB 2 330 429 A (ZYRIS PLC) 21 April 1999 (1999-04-21) * abstract * * page 2, line 17 - line 22 * * page 5, line 18 - line 25 * * page 7, line 30 - page 8, line 9 * * page 9, line 12 - line 20 * * figure 5 * ---	1-5,8-12	
A		6,7,13, 14	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H04N H04L G06F
A	REALNETWORKS, INC.: "RealServer 8.0" REALSERVER ADMINISTRATION GUIDE, [Online] 28 November 2000 (2000-11-28), pages 141-142, XP002177088 Retrieved from the Internet: <URL:http://www.real.com> [retrieved on 2001-09-07] * the whole document * ---	1-14	
		-/-	

The present search report has been drawn up for all claims

Patent Search	Date of conclusion of the search	Examiner
THE HAGUE	10 September 2001	Fantini, F
CATEGORY OF CITED DOCUMENTS		
<input checked="" type="checkbox"/> particularly relevant if taken alone <input type="checkbox"/> particularly relevant if combined with another document of the same category <input type="checkbox"/> technological background <input type="checkbox"/> non-written disclosure <input type="checkbox"/> intermediate document		
1. primary or principle underlying the invention 2. earlier patent document, but published on or after the filing date 3. document cited in the application 4. document cited for other reasons 5. member of the same patent family, corresponding document		



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number

EP 01 10 6133

DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication where appropriate, of relevant passages		
A	BILL BIRNEY: "Intelligent Streaming" INSIDE WINDOWS MEDIA, [CD-ROM] 19 November 1999 (1999-11-19), XP002177089 ISBN: 0789722259 * page 1 - page 2 *	1-14	
A	US 5 546 395 A (LI PING ET AL) 13 August 1996 (1996-08-13) * abstract * * column 8, line 27 - line 44 * * column 31, line 50 - column 32, line 59 *	1-14	
A	EP 0 739 138 A (AT & T CORP) 23 October 1996 (1996-10-23) * page 2, line 19 - line 25 * * page 2, line 33 - line 40 *	1,8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)

The present search report has been drawn up for all claims

EPO-2001-00000000000000000000000000000000

Date of search

Date of completion of the search

Examiner

THE HAGUE

10 September 2001

Fantini, F

## CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone

Y : particularly relevant if combined with another document of the same category

A : technological background

C : non-patent disclosure

P : intermediate document

I : theory or principle underlying the invention

E : earlier patent document, but published on, or after the filing date

D : document cited in the application

M : document cited for other reasons

R : member of the same patent family, corresponding document

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 10 6133

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-09-2001

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
GB 2318030	A	08-04-1998	US	6046985 A		04-04-2000
WO 9900984	A	07-01-1999	US	6014694 A		11-01-2000
			AU	7928998 A		19-01-1999
			EP	0992160 A		12-04-2000
GB 2330429	A	21-04-1999		NONE		
US 5546395	A	13-08-1996	US	5617423 A		01-04-1997
			US	5452289 A		19-09-1995
			WO	9617465 A		06-06-1996
			US	5864560 A		26-01-1999
			CA	2193663 A		25-01-1996
			EP	0769231 A		23-04-1997
			JP	9510850 T		28-10-1997
			WO	9602102 A		25-01-1996
			CA	2104701 A		09-07-1994
			EP	0630141 A		21-12-1994
			JP	9238200 A		09-09-1997
			US	5535204 A		09-07-1996
			US	5453986 A		26-09-1995
			US	5471470 A		28-11-1995
			US	5574725 A		12-11-1996
			US	5673268 A		30-09-1997
			US	5592586 A		07-01-1997
			US	5500859 A		19-03-1996
			US	5559793 A		24-09-1996
			US	6009082 A		28-12-1999
			US	5619508 A		08-04-1997
			US	5673257 A		30-09-1997
			US	5577041 A		19-11-1996
			US	5600649 A		04-02-1997
			US	5790532 A		04-08-1998
			US	5815503 A		29-09-1998
			US	5764627 A		09-06-1998
			US	5754589 A		19-05-1998
			US	5812534 A		22-09-1998
			US	5764628 A		09-06-1998
EP 0739138	A	23-10-1996	CA	2173881 A		20-10-1996
			JP	8298464 A		12-11-1996

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**THIS PAGE BLANK (USPTO)**

This Page is inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record

## BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT OR DRAWING
- BLURED OR ILLEGIBLE TEXT OR DRAWING
- SKEWED/SLANTED IMAGES
- COLORED OR BLACK AND WHITE PHOTOGRAPHS
- GRAY SCALE DOCUMENTS
- LINES OR MARKS ON ORIGINAL DOCUMENT
- REPERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.  
As rescanning documents *will not* correct images  
problems checked, please do not report the  
problems to the IFW Image Problem Mailbox**

**THIS PAGE BLANK (USPTO)**